Python 101 x Scipy

(2) Python Basics Part 1

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Python Basics' Outline (Part 1)

- Interactive Interpreter
- Comments
- Variable and Types
- Numbers and Booleans

Interactive Interpreter

```
terminal$ python3
Python 3.5.0 (v3.5.0:374f501f4567, Sep 12 2015, 11:00:19)
[GCC 4.2.1 (Apple Inc. build 5666) (dot 3)] on darwin Type "help",
"copyright", "credits" or "license" for more information.
>>>
```

Interactive Interpreter

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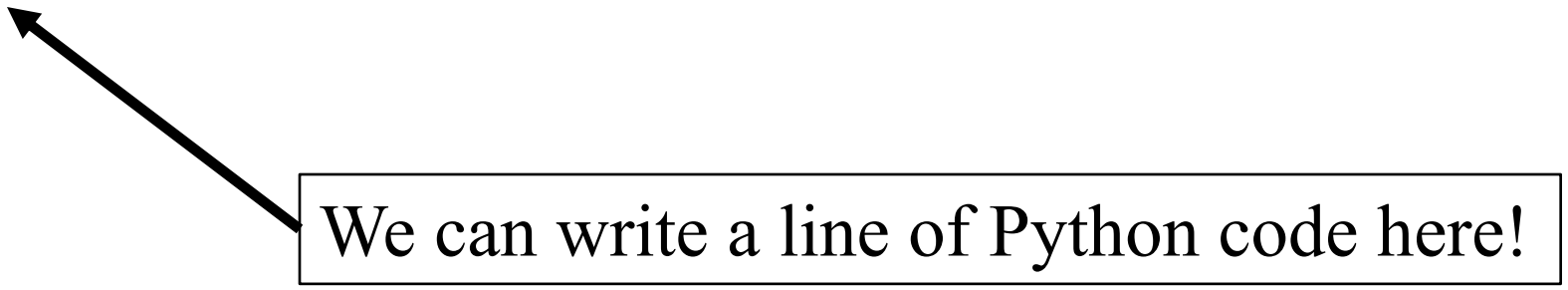
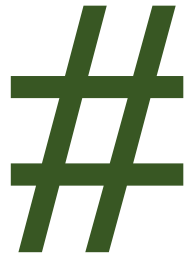
```



Comments

Comments



```
# Single line comments start with a '#’

"""
    Multiline strings can be written
    using three "s, and are often used as
    function and module comments
"""
```

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Variables

Variables

```
x = 2
x * 7
>> 14

x = "Hello, "
x + "Python!"
>> "Hello, Python!"
```

Variables

```
x = 2
x * 7
>> 14
```

Where is a semicolon!

```
x = "Hello, "
x + "Python!"
>> "Hello, Python!"
```

Where is data type?

Variables in C/JAVA and Python

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```
int x = 0;  // In C or JAVA

x = 0  # In Python!!
```

Variable's Types

Variables in Python are **Dynamically-typed**

```
type(1)                 # >> <class 'int'>
type("สวัสดีครับ")      # >> <class 'str'>
type(None)              # >> <class 'NoneType'>
```

Variable's Types

Variables in Python are **Dynamically-typed**

```
type(1)                 # >> <class 'int'>
type("สวัสดีครับ")      # >> <class 'str'>
type(None)              # >> <class 'NoneType'>


type(int)               # >> <class 'type'>
type(type(int))         # >> <class 'type'>
```

Numbers and Math

Variable's Types

```
3               # >> 3 (int)
3.0             # >> 3.0 (float)
```

Python has two numeric types `int` and `float`

Variable's Types

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```
3               # >> 3 (int)
3.0             # >> 3.0 (float)


1 + 1           # >> 2
2 - 1           # >> 1
100 * 2         # >> 200
10 / 5          # >> 2.0
10 / 4          # >> 2.5
```

Variable's Types

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```
3                   # >> 3 (int)
3.0                 # >> 3.0 (float)

1 + 1               # >> 2
2 - 1               # >> 1
100 * 2             # >> 200
10 / 5              # >> 2.0
10 / 4              # >> 2.5

7 // 3              # >> 2 (integer division) หารปัดเศษ
7 % 3               # >> 1 (integer modulus)
2 ** 5              # >> 32 (exponentiation)
```

Booleans

Booleans

```
True                # >> True
False               # >> False
```

Boolean is a subtype of `int`, where `True == 1` and `False == 0`

Booleans

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```
True                    # >> True
False                   # >> False

not True                # >> False

True and False          # >> False

True or False           # >> True (Short-circuit)

1 == 1                  # >> True

2 * 2 == 5              # >> False

1 != 2                  # >> True

4 * 3 != 1              # >> False
```

Booleans

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```
True                    # >> True
False                   # >> False

not True                # >> False

True and False          # >> False

True or False           # >> True (Short-circuit)

1 == 1                  # >> True

2 * 2 == 5              # >> False

1 != 2                  # >> True

4 * 3 != 1              # >> True

1 < 3                   # >> False

1 < 5 < 10              # >> True (1 < 5 and 5 < 10)
```